TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS

PCT/FR2003/001963

Expéditeur : le BUREAU INTERNATIONAL

PCT

NOTIFICATION DE TRANSMISSION DE COPIES DE LA TRADUCTION DU RAPPORT D'EXAMEN PRELIMINAIRE INTERNATIONAL

(règle 72.2 du PCT)

Destinataire :

LEHU, Jean
Brevatome
3, rue du Docteur Lancereaux
F-75008 Paris
FRANCE

BREVATOME
21 MAR. 2005
3 rue du Docteur Lancereaux
75008 PARIS

Date d'expédition *(jour/mois/année)* 17 mars 2005 (17.03.2005)	
Référence du dossier du déposant ou du mandataire B 14046.3 PV	**NOTIFICATION IMPORTANTE**
Demande internationale n° PCT/FR2003/001963	Date du dépôt international *(jour/mois/année)* 25 juin 2003 (25.06.2003)
Déposant COMMISSARIAT A L'ENERGIE ATOMIQUE etc	

1. **Transmission de la traduction au déposant.**

Le Bureau international transmet ci-joint copie de la traduction en langue anglaise qu'il a faite du rapport d'examen préliminaire international établi par l'administration chargée de l'examen préliminaire international.

2. **Transmission d'une copie de la traduction aux offices élus.**

Le Bureau international notifie au déposant qu'une copie de cette traduction a été transmise aux offices élus suivants qui exigent la traduction en question:

AZ, CH, CN, CO, GH, KG, KP, KR, MK, MZ, RO, RU, TM

Les offices élus suivants ont renoncé à l'exigence selon laquelle la transmission doit être effectuée à cette date; ils recevront une copie de cette traduction du Bureau international seulement à leur demande:

AE, AG, AL, AM, AP, AT, AU, BA, BB, BG, BR, BY, BZ, CA, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EP, ES, FI, GB, GD, GE, GM, HR, HU, ID, IL, IN, IS, JP, KE, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MN, MW, MX, NI, NO, NZ, OA, OM, PG, PH, PL, PT, SC, SD, SE, SG, SK, SL, TJ, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. **Rappel concernant la traduction dans la ou l'une des langues officielles de l'office ou des offices élus.**

Il est rappelé au déposant que, lorsqu'une traduction de la demande internationale doit être remise à un office élu, cette traduction doit comporter la traduction de toute annexe du rapport d'examen préliminaire international.

Il appartient au déposant d'établir la traduction en question et de la remettre directement à chaque office élu intéressé (règle 74.1). Voir le volume II du Guide du déposant du PCT pour de plus amples renseignements.

Bureau international de l'OMPI
34, chemin des Colombettes
1211 Genève 20, Suisse

n° de télécopieur+41 22 740 14 35

Fonctionnaire autorisé
Athina Nickitas-Etienne

n° de télécopieur+41 22 338 89 95

Translation

PCT/FR2003/001963

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference B 14046.3 PV	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/FR2003/001963	International filing date (*day/month/year*) 25 juin 2003 (25.06.2003)	Priority date (*day/month/year*) 27 juin 2002 (27.06.2002)
International Patent Classification (IPC) or national classification and IPC G02B 6/42, 6/26		
Applicant COMMISSARIAT A L'ENERGIE ATOMIQUE		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
15 janvier 2004 (15.01.2004)	01 September 2004 (01.09.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

International application No.
PCT/FR2003/001963

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed

☐ the description:

pages 1-17, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages 1-10, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the drawings:

pages 1/3-3/3, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/FR 03/01963

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	7-8, 10	YES
	Claims	1-6, 9	NO
Inventive step (IS)	Claims	8, 10	YES
	Claims	7	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: PATENT ABSTRACTS OF JAPAN vol. 006, no. 198 (P-147), 7 October 1982 & JP 57 108816 A (FUJITSU LTD), 7 July 1982

D2: PATENT ABSTRACTS OF JAPAN vol. 005, no. 084 (P-064), 2 June 1981 & JP 56 030104 A (FUJITSU LTD), 26 March 1981

D3: PATENT ABSTRACTS OF JAPAN vol. 002, no. 133 (E-069), 8 November 1978 & JP 53 100259 A (OKI ELECTRIC IND CO LTD), 1 September 1978

D4: US-A-5 401 270 (SCHOENBORN KARL-HEINZ ET AL) 28 March 1995 (1995-03-28)

1.1 The subject matter of **claims 1-2** is not novel (PCT Article 33(2)) because D1 contains all the technical features of said claims, i.e. a device for automatically centring a laser beam in a light guide (see abstract and figures):

(a) including a volume diffuser (21) comprising a laser beam input surface (see figures);

(b) arranged such that the laser beam is diffused and automatically centred in the light guide (3) (see abstract).

The following points are noted:

(i) As worded, each of claims 1 and 2 only includes a volume diffuser capable of allowing a laser beam and a light guide, such as an optical fibre, to be coupled and centred, in other words, the device includes neither the laser nor the light guide.

(ii) The volume diffuser according to D1 is based on an irregular variation of the refractive index of the core, inducing an irregular variation of the optical path in the diffuser (21) and thereby performing the function of spatially diffusing the light modes in the volume of the diffuser. It follows that element (21) can be referred to as a volume diffuser.

(iii) Claims 1 and 2 cover the same subject matter (since the light guide or the fibre do not form part of the device itself) and therefore lack conciseness (PCT Article 6).

1.2 Furthermore, all the technical features defined in **claims 1-2 and 9** are also disclosed in D2. In particular, D2 describes a volume diffuser (44) (see the figure in combination with the expression "a resin plate mixed with said fine particles" which proves that the diffuser concerned is indeed a volume diffuser and not a surface diffuser) which receives, via an input surface, an optical signal (it is of no consequence to the technical features of the claimed device whether the signal is a laser beam or not) which is diffused and centred automatically in the light guide (7'), the diffuser being coaxially positioned with respect to the output optical fibre (7'). Additionally, an

auxiliary optical fibre (7) is used.

In D2, the diffuser also has the function of attenuator, but it is noted that said claims do not define technical features that exclude the additional function of attenuation.

1.3 The subject matter of claims 1-2 is known from D3 and D4.
D3: see figure 7 in combination with the abstract for D3;
D4: see abstract, column 2, lines 56 to 65 and figures 2a to 2d, which disclose a volume diffuser capable of allowing a laser beam and a light guide, such as an optical fibre, to be coupled and centred.

1.4 In the description page 3, lines 22 to 28 and page 6, lines 24 to 28, the volume diffuser is defined as being a material having little spatial inhomogeneity in its volume relative to the size of the beam, which is the case of the volume diffusers according to D2, D3 or D4. Consequently, even if claims 1 and 2 were limited to this type of material, the subject matter of said claims would be anticipated by each of documents D2 to D4.

2. The subject matter of **dependent claims 3, 5 and 6** is also anticipated by D1 (PCT Article 33(2)): see the term "mode diffusing rod" and the fact that the core of the diffuser (21) is surrounded by a cladding of lower index, i.e. having the function of reflector. Moreover, since the wavelength of the laser is not defined in claim 3, the thickness of the diffuser can have any value.

3.1 The subject matter of **claim 4** is anticipated by D4 (PCT Article 33(2)), which indicates that the volume diffuser is made of Teflon (see column 2, lines 56 to 61).

3.2 Furthermore, the subject matter of **claim 4** does not involve an inventive step (PCT Article 33(3)) relative to D1 or D2, for the following reasons:
As mentioned in Box V, point 1.1(ii) above, the volume diffuser according to D1 is based on an irregular variation of the refractive index of the core, inducing an irregular variation of the optical path in the diffuser (21) and thereby performing the diffusing function.
However, it is considered that a person skilled in the art would use in an equivalent manner any volume diffuser that provides an irregular variation of the optical path, as is the case of spatial light diffusers, which are well known in the prior art. A person skilled in the art would use, in a manner equivalent to the diffuser according to D1, a diffuser as mentioned in D4, made of Teflon for example (see D4, column 2, lines 56 to 65 and column 4, lines 56 to 67), without an inventive step being involved, in order to achieve the function of diffuser and obtain better alignment between a laser and an optical fibre, as taught in D1.

Alternatively, taking D2 as the starting point, selecting a known diffuser, such as Teflon, is not considered to involve an inventive step in the context of D2.

4. The subject matter of **claim 7** does not involve an inventive step (PCT Article 33(3)) because the use

of a defocusing lens at the entrance to the diffuser according to D1 or D2 does not appear to involve an inventive step in the context of said documents (i.e. that of diffusing the light).

5. The subject matter of **claim 8** involves an inventive step (PCT Article 33(3)) for the following reasons: D1 is the only document describing a volume diffuser surrounded by a cladding of lower index, i.e. having the function of reflector. However, extending such a cladding beyond the input surfaces of the diffuser does not appear to be an obvious modification of the device according to D1 and is not suggested in any of the cited documents.

6.1 It is noted that **method claim 10** is not supported by the description (PCT Article 6), since it refers to the device according to one of claims 1 to 5, whereas the manufacturing method described in the description page 10, line 12 to page 12, line 17 refers to the device according to one of claims 6 and 8, which contains a tubular light reflector surrounding the volume diffuser. As a consequence, said method should refer to the device according to claim 6 or 8 and make reference to a tubular light reflector (6).

The subject matter of **claim 10** involves an inventive step (PCT Article 33(3)), since none of the cited documents discloses or suggests the manufacturing step whereby the volume diffuser is made using a punch. This technique does not appear obvious when a volume diffuser such as the one disclosed in D1 or D4 is to be made, which has to be a few hundred microns in diameter.

7. In the light of the cited documents, the subject matter of claims 1 to 10 is clearly industrially applicable (PCT Article 33(4)).